of the serving cell. All the measurement results of the mobile station MS are regularly transmitted to a base station controller BSC through a parallel control channel SACCH associated with the time slot of traffic channel TCH. The base station BTS monitors (measures) the level and quality of the uplink signal received from each of the mobile stations MS served by said base station BTS.

On the basis of the measurement results, the BSC controls the power of the mobile station MS by power control commands transmitted to the MS in the downlink direction through the control channel SACCH, and makes the handover decisions. The BSC may also use the measurement results to control the transmission power of the serving base station.

Procedures and calculations used in radio networks for determining suitable transmitting power levels are referred to as power control algorithms. There are many different types of algorithms, but usually their aim is the lowest possible transmitting power level and, thus, low interference levels.

Decisions on handovers during on-going calls are made by a base station controller BSC on the basis of various handover parameters assigned to each cell, and on the basis of measurement results reported by a mobile station MS and base stations BTS. A handover is normally carried out on the basis of criteria of the radio path, but it can be performed due to other reasons as well, for example, load sharing. The procedures and calculations used as the basis of a handover decision are referred to as a handover algorithm. Alternatively, all handover decisions can be made at a mobile services switching center MSC to which all the measurement results are in such a case transmitted. An MSC also controls at least those handovers occurring from the area of one base station controller to the area of another.

As a mobile station is, in accordance with the invention, assigned several time slots within the same frame for high-speed data transmission, the mobile station measures the level and quality of the downlink signal separately in each time slot assigned to it. In the example of FIG. **10**, a mobile station MS is assigned the adjacent time slots 0 and 1. The mobile station MS measures the level and quality of the downlink signal of the serving cell independently in time slot 0 and 1 on the traffic channel TCH assigned to it. During the other time slots, the mobile station MS measures the levels of the downlink signals of the neighbouring cells of the serving cell.

In the primary embodiment of the present invention, each time slot assigned to a mobile station MS, the traffic channel TCH, has a dedicated parallel control channel SACCH through which the measurement results relating to the respective time slot are transmitted to a base station controller BSC.

A base station controller BSC controls the transmitting power of a mobile station MS separately in each time slot, in other words, on the traffic channel TCH, by power control commands transmitted to the mobile station MS in the downlink direction through the control channel SACCH of the traffic channel. Power control on an individual channel is otherwise carried out in accordance with the GSM recommendations.

Alternatively, a base station controller BSC may control the transmitting power levels of all the time slots by a common power control command transmitted to the mobile station MS in the downlink direction through one of the parallel control channels.

The handover decision is made by the base station controller on the basis of a combination of measurement results of two or more time slots assigned to a mobile station MS, or on the basis of a measurement result of the poorest time slot. As the decision to carry out a handover is made, a modified handover command is transmitted to the mobile station MS, as described above.

In a second embodiment of the present invention, all the time slots assigned to a mobile station MS, the traffic channels TCH, have a common, parallel control channel SACCH through which a combination of measurement results of the time slots is transmitted to a base station controller BSC. This combination of the measurement results can, for example, be the average value of the measurement results of the various time slots.

The base station controller BSC controls the transmitting power levels of the mobile station MS jointly in all the time slots, in other words, on the traffic channels TCH, by common power control commands transmitted to the mobile station MS in the downlink direction through the common control channel SACCH.

The handover decision is made by the base station controller on the basis of a combination of measurement results of either all or some of the time slots assigned to a mobile station MS. As the decision to carry out a handover is made, a modified handover command is transmitted to the mobile station as described above. As noted above the present invention is universally applicable on various kinds of multiple access methods and traffic channels. In CDMA systems the traffic channels are defined by pseudorandom noise (PN) codes, i.e. spreading codes, assigned to each user or connection. From the present invention point of view the CDMA traffic channel is similar to the TDMA traffic channel. The basic contribution of the present invention is allocate parallel traffic channels to a single user so as to provide a high-speed data connection.

Such a high-speed data transmission according to the present invention over N parallel CDMA traffic channels is illustrated in FIG. **11**. A high-speed data signal DATAIN that is to be transmitted over the radio path is divided in a data splitter **61** into the required number of slower-speed data signals DATA1 . . . DATAN. A respective number N of parallel CDMA traffic channels ch**0** . . . chn is allocated for the transmission. In other words, an unique spreading code is allocated for each slower-speed signal DATA1 . . . DATAN in order to distinguish them from each other during simultaneous transmission over the radio interface. The spreading codes of the system are preferably selected in such a way that the codes used in each system cell are mutually orthogonal, i.e. they do not correlate with each other. One class of suitable orthogonal binary sequencies is called the Walsh function. In the embodiment shown in FIG. **11** the traffic channel separation is done by coding (multiplying) each lower-speed data stream DATA1 . . . DATAN by modified Walsh functions **1** . . . N of length **255** in respective Walsh encoders $\mathbf{62}_1$ . . . $\mathbf{62}_N$, in order to spread the data streams in bandwidth. The Walsh function is modified so that last bit of all of the functions have been deleted. The spread-spectrum data streams are fed to through radio frequency (RF) parts **63** to an antenna **64** for transmission over the radio interface.

The RF signal received at receiving antenna **65** is fed through radio frequency (RF) parts **66** and split in parallel to correlator branches $\mathbf{67}_1$ . . . $\mathbf{67}_N$. Correlators $\mathbf{67}_1$ . . . $\mathbf{67}_N$ are Walsh decoders each of which decodes (multiplies) the received spread-spectrum signal by the Walsh function **1** . . . N of the respective CDMA traffic channel ch**0** . . . chn, in order to despread the signal in bandwidth and to restore the